Dental Hygiene

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KSC/CCAFS Health Education and Wellness Program

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Introduction

According to a report released by the Centers for Disease Control and Prevention (CDC) and the National Institutes of Health (NIH), the oral health status of Americans has significantly improved during the past decade. The report uses data from the National Health and Nutrition Examination Survey (NHANES) and provides the most current estimates of dental conditions such as cavities, use of dental sealants to prevent cavities and tooth loss.

Among the major findings are improvements since 1994 in the percentage of children and teens who have never had tooth decay in their permanent teeth; increased use of dental sealants (a thin plastic coating applied to the chewing surfaces of back teeth to prevent decay); and increased tooth retention among older adults.

October marks National Dental Hygiene month. Despite the improvements in dental health over the past 10 years, it is important to continue the improvements of dental health among all age groups.

Proper Brushing

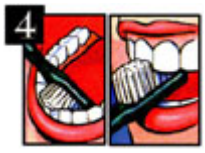
Proper brushing is essential for cleaning teeth and gums effectively. Use a toothbrush with soft, nylon, round-ended bristles that will not scratch and irritate teeth or damage gums.

Place bristles along the gumline at a 45-degree angle. Bristles should contact both the tooth surface and the gumline.

Gently brush the outer tooth surfaces of 2-3 teeth using a vibrating back & forth rolling motion. Move brush to the next group of 2-3 teeth and repeat.

Maintain a 45-degree angle with bristles contacting the tooth surface and gumline. Gently brush using back, forth, and rolling motion along all of the inner tooth surfaces.

Tilt brush vertically behind the front teeth. Make several up & down strokes using the front half of the brush.



Place the brush against the biting surface of the teeth & use a gentle back & forth scrubbing motion. Brush the tongue from back to front to remove odor-producing bacteria.

--Illustrations adapted by and used courtesy of the John O. Butler Company--

Remember to replace your toothbrush every three to four months. Researchers have established that thousands of microbes grow on toothbrush bristles and handles. Most are harmless, but others can cause cold and flu viruses, the herpes virus that causes cold sores and bacteria that can cause periodontal infections.

Proper Flossing

Flossing is an essential part of the tooth-cleaning process because it removes plaque from between teeth and at the gumline, where periodontal disease often begins.

If you find using floss awkward or difficult, ask your dental hygienist about the variety of dental floss holders or interdental cleaning devices that are available.

Wind 18" of floss around middle fingers of each hand. Pinch floss between thumbs and index fingers, leaving a 1"- 2" length in between. Use thumbs to direct floss between upper teeth.

Keep a 1" - 2" length of floss taut between fingers. Use index fingers to guide floss between contacts of the lower teeth.

Gently guide floss between the teeth by using a zig-zag motion. DO NOT SNAP FLOSS BETWEEN YOUR TEETH. Contour floss around the side of the tooth.

Slide floss up and down against the tooth surface and under the gumline. Floss each tooth thoroughly with a clean section of floss.

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In addition to brushing and flossing, there are other steps you should take if you want to keep your teeth for a lifetime. Some people assume they will lose their teeth as they age, but that doesn't have to happen. David A. Albert, D.D.S., M.P.H., assistant professor of clinical dentistry at the Columbia University School of Dental and Oral Surgery, suggests these steps to keep your teeth and your mouth healthy.

Understand your own oral health needs.

"Your oral health depends on many factors, including your diet [what you eat], the type and amount of saliva in your mouth, habits, your overall health and your oral hygiene routine."

Changes in your overall health status often result in changes in your oral health. "For example, many medications, including more than 300 common drugs, can reduce the amount of saliva in your mouth, resulting in dry mouth. They also can make your saliva ropy or thicker in consistency. Women who are pregnant experience oral changes. This often includes inflammation of the gums, which is called pregnancy gingivitis. Patients with asthma often breathe through their mouths, particularly when sleeping, which can result in dry mouth and increased plaque formation and gingivitis."

Commit to a daily oral health routine.

Based on discussions with your dentist or dental hygienist, come up with an effective oral health routine that's easy to follow and takes your situation into account. For example, if you are taking medication that dries your mouth, you may want to use fluoride every day. Pregnant women, people with underlying health conditions, such as diabetes, and people in orthodontic treatment also may want or need special daily care.

Use fluoride.

Everyone can benefit from fluoride, not just children. Fluoride strengthens developing teeth in children and helps prevent decay in adults and children. Toothpastes and mouthwashes are good sources of fluoride. Your dentist can prescribe stronger concentrations of fluoride through gels or rinses if you need it.

Brush and floss to remove plaque.

Everyone should brush at least twice a day, preferably three times or after every meal. In addition, you should floss at least twice a day. These activities remove plaque, which is a complex mass of bacteria that constantly forms on your teeth. If plaque isn't removed every day, it can process sugars found in most foods and drinks to form acids that lead to decay. Bacterial plaque also causes gingivitis and other periodontal diseases. It's important to brush and floss correctly and thoroughly, removing plaque from all tooth surfaces and where the tooth meets the gums. If plaque is not removed, it can lead to gum problems and cavities.

Limit snacks, particularly those high in simple sugars, and eat a balanced diet.

Every time you eat, particles of food become lodged in and around your teeth, providing fuel for bacteria. The bacteria in the plaque produce acid every time you eat. The more often you eat and the longer food stays in your mouth, the more time bacteria have to break down sugars and produce acids that begin the decay process. Each time you eat food containing sugars or starches (complex sugars), your teeth are exposed to bacterial acids for 20 minutes or more. These repeated acid attacks can break down the enamel surface of your teeth, leading to a cavity. If you must snack, brush your teeth or chew sugarless gum afterward.

A balanced diet is also important. Deficiencies in minerals and vitamins can also affect your oral health, as well as your general health.

If you use tobacco in any form, quit.

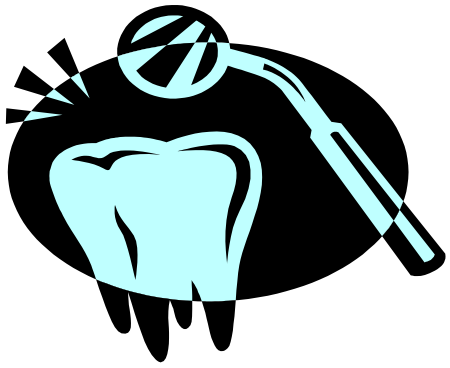
Smoking or using smokeless tobacco increases your risk of oral cancer, gingivitis, periodontitis and tooth decay. It also contributes to bad breath and stains on your teeth.

Examine your mouth regularly.

Even if you visit your dentist regularly, you are in the best position to notice changes in your mouth. Your dentist sees you only a few times a year, but you can examine your mouth weekly to look for changes that might be of concern. These changes could include swollen gums, chipped teeth, discolored teeth or sores or lesions on your gums, cheeks or tongue. A regular examination is particularly important for tobacco users, who are at increased risk of developing oral cancer. If you smoke or use smokeless tobacco, your dentist or dental hygienist can show you where lesions are most likely to appear.

Visit the dental office regularly.

You and your dentist should talk about the frequency of your visits. Some people need to visit their dentist more frequently than others.



The Importance of Fluoride

Enamel, the outer layer of the crown of a tooth, is made of closely packed mineral crystals. Every day, minerals are lost and gained from inside the enamel crystals in processes called demineralization and remineralization.

Demineralization is when acids in the mouth dissolve the enamel crystals that make up the outer layer of the crown of the tooth. These acids are formed by the combination of plaque bacteria and sugar in your mouth. This process is balanced by remineralization, in which minerals such as fluoride, calcium and phosphate are deposited inside the enamel. Too much demineralization without enough remineralization to repair the enamel leads to tooth decay.

Fluoride helps teeth in two ways. When children eat or drink fluoride in small doses, it enters the bloodstream and becomes part of their developing permanent teeth and makes it harder for acids to cause demineralization. Fluoride also works directly on teeth in the mouths of children and adults by helping to speed remineralization and disrupt the production of acids by bacteria.

Fluoride Treatments

Fluoride in foods, fluoride supplements and fluoridated water enter the bloodstream through the stomach, and then are absorbed into the body. In children, the fluoride then becomes available to the teeth that are developing in the jaw.

Topical fluoride products are applied directly to the teeth. They include toothpaste, mouth rinses and professionally applied fluoride treatments. Topical fluoride treatments are in the mouth for only a short time but fluoride levels in the mouth remain higher for several hours afterward. Fluoride found in the water and in food products also works this way because the water washes over the teeth and some fluoride remains in the saliva.

Fluoride treatments are given in a dental office and are applied as a gel, foam or varnish during a dental appointment. The fluoride used for these treatments is at much higher strength than mouthwashes or toothpastes. Fluoride supplements also are available by prescription, and usually are reserved for children who live in areas without community water fluoridation. Children who need supplements receive them from ages 6 months to 16 years.

Oral Health and the Health of Your Body

Taking good care of your mouth, teeth and gums is a worthy goal in and of itself. Good oral and dental hygiene can help prevent bad breath, tooth decay and gum disease — and can help you keep your teeth as you get older.

Researchers are also discovering new reasons to brush and floss. A healthy mouth may help you ward off medical disorders. On the flip side, an unhealthy mouth, especially if you have gum disease, may increase your risk of serious health problems such as heart attack, stroke, poorly controlled diabetes and preterm labor.

Many conditions cause oral signs and symptoms

Your mouth is a window into what's going on in the rest of your body, often serving as a helpful vantage point for detecting the early signs and symptoms of systemic disease — a disease that affects or pertains to your entire body, not just one of its parts. Systemic conditions such as AIDS or diabetes, for example, often first become apparent as mouth lesions or other oral problems. In fact, according to the Academy of General Dentistry, more than 90 percent of all systemic diseases produce oral signs and symptoms.

Saliva: Helpful diagnostic tool

Your doctor can collect and test saliva to detect for a variety of substances. For example, cortisol levels in saliva are used to test for stress responses in newborn children. And fragments of certain bone-specific proteins may be useful in monitoring bone loss in women and men prone to osteoporosis. Certain cancer markers are also detectable in saliva.

Routine saliva testing can also measure illegal drugs, environmental toxins, hormones and antibodies indicating hepatitis or HIV infection, among other things. In fact, the ability to detect HIV-specific antibodies has led to the production of commercial, easy-to-use saliva test kits. In the future, saliva testing may replace blood testing as a means of diagnosing and monitoring diseases such as diabetes, Parkinson's disease, cirrhosis of the liver and many infectious diseases.

Protection against harmful invaders: How saliva disables bacteria and viruses

Saliva is also one of your body's main defenses against disease-causing organisms, such as bacteria and viruses. It contains antibodies that attack viral pathogens, such as the common cold and HIV. And it contains proteins called histatins, which inhibit the growth of a naturally occurring fungus called *Candida albicans*. When these proteins are weakened by HIV infection or other illness, candida can grow out of control, resulting in a fungal infection called oral thrush.

Saliva also protects you against disease-causing bacteria. It contains enzymes that destroy bacteria in different ways, by degrading bacterial membranes, inhibiting the growth and metabolism of certain bacteria, and disrupting vital bacterial enzyme systems.

The problem with dental plaque: Links to infections and diseases

Though your saliva helps protect you against some invaders, it can't always do the job. More than 500 species of bacteria thrive in your mouth at any given time. These bacteria constantly form dental plaque — a sticky, colorless film that can cling to your teeth and cause health problems.

Your mouth as infection source

If you don't brush and floss regularly to keep your teeth clean, plaque can build up along your gumline, creating an environment for additional bacteria to accumulate in the space between your gums and your teeth. This gum infection is known as gingivitis. Left unchecked, gingivitis can lead to a more serious gum infection called periodontitis. The most severe form of gum infection is called acute necrotizing ulcerative gingivitis, also known as trench mouth.

Bacteria from your mouth normally don't enter your bloodstream. However, invasive dental treatments — sometimes even just routine brushing and flossing if you have gum disease — can provide a port of entry for these microbes. Medications or treatments that reduce saliva flow and antibiotics that disrupt the normal balance of bacteria in your mouth can also compromise your mouth's normal defenses, allowing these bacteria to enter your bloodstream.

If you have a healthy immune system, the presence of oral bacteria in your bloodstream causes no problems. Your immune system quickly dispenses with them, preventing infection. However, if your immune system is weakened, for example because of a disease or cancer treatment, oral bacteria in your bloodstream (bacteremia) may cause you to develop an infection in another part of your body. Infective endocarditis, in which oral bacteria enter your bloodstream and stick to the lining of diseased heart valves, is an example of this phenomenon.

Plaque as cause of common conditions

Long-term gum infection can eventually result in the loss of your teeth. But the consequences may not end there. Recent research suggests that there may be an association between oral infections — primarily gum infections — and poorly controlled diabetes, cardiovascular disease and preterm birth. More research is needed to determine whether oral infections actually cause these conditions, which include:

Poorly controlled diabetes. If you have diabetes, you're already at increased risk of developing gum disease. But chronic gum disease may, in fact, make diabetes more difficult to control, as well. Infection may cause insulin resistance, which disrupts blood sugar control.

Cardiovascular disease. Oral inflammation due to bacteria (gingivitis) may also play a role in clogged arteries and blood clots. It appears that bacteria in the mouth may cause inflammation throughout the body, including the arteries. This inflammation may serve as a base for development of atherosclerotic plaques in the arteries, possibly increasing your risk of a heart attack or stroke.

Some research suggests that people with gum infections are also at increased risk of heart attack and stroke. The more severe the infection, the greater the risk appears to be. And gum disease and tooth loss may contribute to plaques in the carotid artery. In one study, 46 percent of participants who'd lost up to nine teeth had carotid artery plaque; among those who'd lost 10 or more teeth, 60 percent of them had such plaque.

Preterm birth. Severe gum disease may increase the risk of preterm delivery and giving birth to a low birth weight baby. The National Institute of Dental and Craniofacial Research, in fact, estimates that as many as 18 percent of preterm, low birth weight babies born in the United States each year may be attributed to oral infections.

The theory is that oral bacteria release toxins, which reach the placenta through the mother's bloodstream and interfere with the growth and development of the fetus. At the same time, the oral infection causes the mother to produce labor-triggering substances too quickly, potentially triggering premature labor and birth.

A compelling case for good habits

If you didn't already have enough reasons to take good care of your mouth, teeth and gums, the relationship between your oral health and your overall health provides even more. Resolve to practice good oral hygiene every day. You're making an investment in your overall health, not just for now, but for the future, too.

Gum-chewers Have a New Reason to Smile

In the eighties, artificial sweeteners in blue and pink packets, diet soda and sugar-free gum set the standard as "healthy" alternatives to their sugar-laden parent products. Today, there's a new sweetener called xylitol touting sweet-as-sugar taste, a low-calorie makeup and studies now show it may help reduce and prevent cavities.

A natural sweetener found in plants and fruits, the Food and Drug Administration (FDA) approved xylitol in 1986 as a food additive and is now appearing in sugar-free gum, mints, and toothpaste reports the Academy of General Dentistry, an organization of general dentists dedicated to continuing education.

Research confirms that of all factors studied, xylitol most likely inhibits the growth of streptococcus mutans, the oral bacteria that cause cavities, according to Allen Otsuka, PhD, one author of a new study that appears in the July/August issue (Volume 50, Number 4) of the clinical, peer-reviewed publication, *General Dentistry*.

Cavities form when plaque-made of many oral bacteria-builds up on a tooth and eats into the outer enamel. In the presence of xylitol, bacteria loose the ability to adhere to the tooth stunting the cavity-causing process.

While not new to the dental community, xylitol is now gaining attention among consumers since being added to several new mainstream sugar-free gums.

"I use xylitol and have recommended products that contain xylitol such as mouth rinses for patients with dry mouth," says John Chandler, DDS, MAGD, spokesperson for the Academy of General Dentistry. "While dentists need to monitor the continuing research on xylitol, I do see a place for patients using xylitol in conjunction with good oral health care."

Dentists recommend children and adults brush twice daily with fluoridated toothpaste, visit the dentist twice a year and eat nutritiously to ensure a healthy mouth and body.

A U.S. government survey indicates that 85 percent of all American adults have experienced cavities; 30 percent suffer from untreated cavities which can result in serious oral health problems including pain and eventual tooth loss.

Experts recommend using xylitol directly after meals and snacks to help reduce plaque on teeth, inhibit bacteria and reduce contact time of sugar on teeth.

Tips for keeping your mouth sugar-free throughout the day

- Keep a toothbrush and toothpaste handy; children can keep travel-size products in lockers or back packs and adults should keep a spare pair at work
- Chew sugarless gum, with or without xylitol, after meals or snacks when unable to brush

Drink water throughout the day to help cleanse teeth of excess bacteria

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Resources

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American Dental Association
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